

What is Claimed is:

1. A dry grinding system comprising:

grinding means for dry-grinding a material to be ground;

first classification means for classifying a ground product obtained through the grinding means, into fine powder having a relatively small average particle size and coarse powder having a relatively large average particle size;

second classification means for further classifying the coarse powder obtained through the first classification means, into fine powder having a relatively small average particle size and coarse powder having a relatively large average particle size; and

returning means for returning to the grinding means the coarse powder obtained through the second classification means.

2. A dry grinding system according to claim 1, which further comprises:

third classification means for further classifying the fine powder obtained through the second classification means, into fine powder having a relatively small average particle size and coarse powder having a relatively large average particle size; and

returning means for returning to the grinding means the coarse powder obtained through the third classification means.

3. A dry grinding system according to claim 1, wherein the grinding means is a ball mill.

4. A dry grinding system according to claim 1, wherein the first classification means is an air classifier.

5. A dry grinding system according to claim 1, wherein the second classification means is a sieve.

6. A dry grinding system according to claim 2, wherein the third classification means is a sieve.

7. A dry grinding system according to claim 5, wherein the second classification means includes:

classification means for further classifying the resultant fine powder into ultrafine powder having a relatively small average particle size and fine powder having a relatively large average particle size; and

returning means for returning to the grinding means the ultrafine powder obtained through this classification means.

8. A dry grinding system according to claim 6, wherein the third classification means includes:

classification means for further classifying the resultant fine powder into ultrafine powder having a relatively small average particle size and fine powder having a relatively large average particle size; and

returning means for returning to the grinding means the ultrafine powder obtained through this classification means.

9. A dry grinding system according to claim 1, which further comprises collection means for collecting the fine powder obtained through the first classification means, and collection means for collecting the fine powder obtained through the second classification means, wherein the

collection means for collecting the fine powder obtained through the second classification means includes means for removing iron.

10. A dry grinding system according to claim 2, which further comprises collection means for collecting the fine powder obtained through the first classification means, and collection means for collecting the fine powder obtained through the third classification means, wherein the collection means for collecting the fine powder obtained through the third classification means includes means for removing iron.

11. A dry grinding system according to claim 9 or 10, wherein the fine powder obtained through the first classification means has an average particle size of 5 to 25  $\mu\text{m}$ .

12. A dry grinding system according to claim 9, wherein the fine powder obtained through the second classification means has an average particle size of 45 to 90  $\mu\text{m}$ , and a bulk density of 1.7 to 2.3.

13. A dry grinding system according to claim 10, wherein the fine powder obtained through the third classification means has an average particle size of 45 to 90  $\mu\text{m}$ , and a bulk density of 1.7 to 2.3.

14. A dry grinding system according to claim 1, wherein the material to be ground is alumina.

15. A dry grinding method comprising:  
a grinding step of dry-grinding a material to be

ground;

a first classification step of classifying a ground product obtained through the grinding step, into fine powder having a relatively small average particle size and coarse powder having a relatively large average particle size;

a second classification step of further classifying the coarse powder obtained through the first classification step, into fine powder having a relatively small average particle size and coarse powder having a relatively large average particle size; and

a returning step of returning to the grinding step the coarse powder obtained through the second classification step.

16. A dry grinding method according to claim 15, wherein the second classification step includes:

a classification step of further classifying the resultant fine powder into ultrafine powder having a relatively small average particle size and fine powder having a relatively large average particle size; and

a returning step of returning to the grinding step the ultrafine powder obtained through this classification step.

17. A dry grinding method according to claim 15 or 16, which further comprises a collection step of collecting the fine powder obtained through the first classification step, and a collection step of collecting the fine powder obtained through the second classification step, wherein the collection step of collecting the fine powder obtained through the second classification step includes a step of

removing iron.

18. A dry grinding method according to claim 15, which further comprises:

a third classification step of further classifying the fine powder obtained through the second classification step, into fine powder having a relatively small average particle size and coarse powder having a relatively large average particle size; and

a returning step of returning to the grinding step the coarse powder obtained through the third classification step.

19. A dry grinding method according to claim 18, wherein the third classification step includes:

a classification step of further classifying the resultant fine powder into ultrafine powder having a relatively small average particle size and fine powder having a relatively large average particle size; and

a returning step of returning to the grinding step the ultrafine powder obtained through this classification step.

20. A dry grinding method according to claim 18 or 19, which further comprises a collection step of collecting the fine powder obtained through the first classification step, and a collection step of collecting the fine powder obtained through the third classification step, wherein the collection step of collecting the fine powder obtained through the third classification step includes a step of removing iron.